D301.81: 28/9

Combat Crew

strategic air command

UNIVERSITY ... DOCUMENTS DEPT. 1978

SEPTEMBER 1978

★★★★

CINCSAC COMMENTS

A LETTER TO SAC COMBAT CREWS

Crew duty is tough, demanding duty. You know that, and I'm writing this letter because I want you to know that we in the upper echelons of command also realize it's tough. If someone promised or you expected something else, then they or you don't understand the Air Force mission. Your obligation as a combat crew member is above and beyond that expected of any other group of Americans. But, you are well prepared for the task — each of you has met and passed a rigid selection and training process to get where you are today. Knowing your capabilities and knowing SAC's mission, I expect you to meet your obligation with maturity, determination and courage.

Let's look at the demands placed upon you as a combat crew. Unlike other professionals, crew duty touches every facet of your life because of alert tours, constant training, numerous evaluations and family separations. SAC crews are not alone in the combat crew business. Navy Blue or Gold crew submariners are on patrol for months at a time; fighter crews pull alert in ADC, USAFE, PACAF, and the Alaskan Air Command; and the U.S. Army stands long watches along the forbidding borders of East Germany, Czechoslovakia and North Korea. Without these alert forces — without their dedication and sacrifice — this Nation would not possess a credible deterrent. You in SAC are at the heart of our deterrent strategy. You give us the edge needed to make the TRIAD the dominant factor in maintaining peace in a dangerous world.

I'll be the first to agree that crew duty is both challenging and boring, fascinating and frightening, and hectic as well as slow-paced. Crew duty also has many short-comings — some can be fixed, others cannot. We are doing our best to correct as many of them as possible. For example:

- We are talking to your immediate commanders about better ways to describe on OERs/APRs the immense responsibilities of a crew member's job so that each one of you will remain fully competitive with your peers throughout the Air Force.

FLARE

- Senior officers, and particularly promotion board members, are being made aware that combat crew duty is the foundation upon which a career is built. There is no better way to prepare for a leadership role in the future than by serving on a combat crew today.
- We are working closely with MPC to ensure a crew member's career ultimately leads to related staff and command assignments.
- Ways to make crew duty more challenging and rewarding are being explored. For example, we are expanding the role of SAC aircraft in contingency and collateral (sea surveillance, mining) operations through increased participation in exercises such as RED FLAG and MAPLE FLAG.
- More realistic scenarios are being used in the evaluation of our missile combat crews.
- Mechanisms have been implemented to move aircrews from Northern Tier bases after four years. Meanwhile, we are trying to shorten the tour to three years. Missile crews already have a four year directed duty assignment, although many will not spend the entire time on crew duty.

These improvements will help enhance crew member job satisfaction. However, real job satisfaction can only come from the realization that you have accepted a tough job head-on and given it your best shot.

As mentioned earlier, you have a difficult, demanding job and there is no reasonable way to change its basic character. However, there is always the question of the right person for the right job. Combat crew members, like others in the Air Force, from time to time see greener pastures associated with other jobs or professions. Before jumping the fence, you should carefully add the pros and cons. Few professions offer the job satisfaction found in the Air Force; few careers match the Air Force in responsibility, interest and adventure; we are a volunteer force and will remain one. If you leave us when your obligation is over, we will respect your decision. If you stay, be prepared for increasing responsibilities and increasing demands from the Air Force.

For the great majority who accept the challenge of combat crew duty, you have my total support. In the final analysis, it will be proven that you, the combat crew members of the Strategic Air Command, are primary guardians of freedom for this great country.

General Richard H. Ellis
Commander in Chief, SAC

Combat Crew

Magazine of the Strategic Air Command - 29th Year of Publication

GEN. RICHARD H. ELLIS
COMMANDER IN CHIEF, SAC

BRIG. GEN. PATRICK J. HALLORAN
Inspector General

COL. BURR V. MILLER, JR.
Director of Safety

STAFF

MAJ. STEPHEN J. MILLER
Editor
G. FRANCIS FARRELL
Associate Editor
Sgt. GERALD F. MORIARTY
Art Editor
MARY JANE ABBOUD
Editorial Assistant

UNIV. OF FLORIDA LIBS.
DOCUMENTS
DEPARTMENT
U.S. DEPOSITORY

IN THIS ISSUE

A Team Effort 4
The Art of Listening 6
A Legacy of Safety 8
Big Instrument 12
ACE Topics 15
Close Encounters 16
Ops Hazards 24
R&D Corner 26

ON OUR COVER

It's a team effort. SAC's Maintenance people work hard and long to give our crews aircraft ready to go. For more on this, see page 4.

SACRP 127-1 VOL. XXVIII, NO. 9 SEPTEMBER 1978

COMBAT CREW is an internal publication of the Strategic Air Command with the sole purpose of promoting safety. The contents of this magazine are informative and not to be considered as directive in nature. Facts, testimony and conclusions of all mishaps printed herein may not be construed as incrimination under Article 31 of the Uniform Code of Military Justice. All names, dates and places used in conjunction with mishap stories are fictitious. Written permission must be obtained from Headquarters, Strategic Air Command, before any material may be reprinted by other than U.S. Air Force organizations. Use of funds for printing this publication has been approved by Hq. USAF. Distribution FX, controlled by IGFC. Authority to publish this periodical automatically expires on 26 January 1980, unless its continuance is authorized by the approving authority prior to that date. Contributions are encouraged as well as comments and criticisms. Direct correspondence with the Editor is authorized. Address correspondence to Editor, COMBAT CREW, Hq SAC/IGFC, Offutt AFB, Ne. 68113.

Major General Martin C. Fulcher
SAC Deputy Chief of Staff, Logistics

The Air Force today is challenged as never before. We are required to continually increase our state of readiness and be prepared to counter a wider range and variety of threats while doing our part to conserve energy resources, improve the environment, and find more efficient and cost effective ways of supporting the mission. As the Command LG, it is my task to "Keep 'em Flying" and insure that the vast logistics network is capable of sustaining the

OPERATIONS AND MAINTENANCE READINESS: A TEAM EFFORT

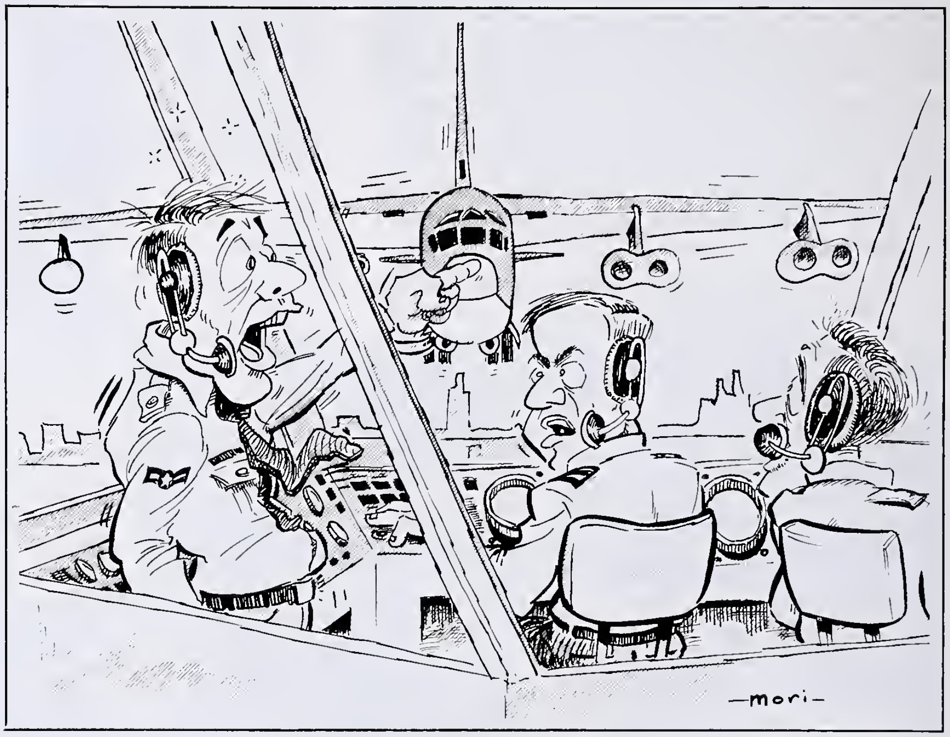
element of readiness required by today's international political and military environment. At the same time, we must exert every effort to economize while constantly upgrading our aircraft systems and enhancing safety. The task is not easy. It requires the best efforts from thousands of Air Force military and civilian members working together to provide operationally capable and safe aircraft. It also requires constant, professional teamwork by maintenance and operations.

There are many areas where maintenance interfaces with operations, but in the typical SAC wing, most of the interface occurs at the staff level. Maintenance debriefing is one area where the average crew member has a direct interface with maintenance personnel. The importance of a good debriefing cannot be over-emphasized. It marks the beginning of the recovery cycle for our aircraft, and the way it is handled will have a great impact on the quality of maintenance that will follow. The carefully detailed write-up not only provides an excellent record of system performance, it frequently points to the cause of a malfunction saving many troubleshooting manhours and, in some cases, many dollars for hardware by preventing a catastrophic failure such as an engine shellout. Accurate descriptions of inflight malfunctions also increase the probability that the maintenance technician will be able to duplicate and repair them. In most cases, the only information the technician has concerning a malfunction is that which is recorded in the AFTO Form 781A, "Maintenance Discrepancy and Work Document," and that which is gathered through debriefing. If that information is not adequate, then the malfunction may not be isolated and repaired until the next crew flying the airplane provides a more accurate and complete write-up. Debriefing provides an excellent opportunity for both maintenance and operations to promote professionalism and improve the care of our aircraft.

Once debriefing is over, the crew members' involvement with maintenance normally ends until the next flight. In the meantime, maintenance crews refuel, service, inspect, and perform the scheduled and unscheduled maintenance required for the aircraft's next mission. Throughout the entire cycle, the operations and maintenance staffs are continuously working on the flying schedule, developing quarterly projections, monthly and weekly schedules, and refining the schedules on a daily basis as changes in mission requirements and aircraft availability dictate. This process requires the utmost in cooperation and teamwork. Maintenance capability rarely exceeds operational requirements, and de-

Continued on page 19

The maintenance debriefing is an essential part of the Team effort.



What are you trying to say, Crenshaw??

The Art of Listening

The following is from a recent FAA Air Traffic Service Bulletin in which the Director addressed a problem shared by air traffic controllers and aircrews. Ed.

We continue to be very much concerned over system errors because they are an indicator that something is wrong. Unfortunately, system error reports are showing a significant trend in failures to catch discrepancies in "readbacks," thus thwarting a real opportunity to prevent that system error or worse. Some of the most common problems deal with misunderstandings in the delivery, receipt, and readback of clearance information. By far, the majority of incidents are a result of someone doing or not doing what someone else expected. Here are some actual examples:

Aircraft A was level at 5000 feet and aircraft B, slightly behind A, was given a clearance to descend and maintain 6000 feet. The pilot read back 5000 feet, the altitude assignment for aircraft A. The controller did not catch the error, and separation was lost.

Ever happened to you?

Prior to approaching the destination airport, the center cleared an aircraft operating at 17,000 feet to descend and maintain 6000 feet. The pilot acknowledged the clearance, but read back 3000 feet. Shortly thereafter, the pilot *reported leaving 17,000 feet for 3000 feet. Upon reaching 3000 feet, the pilot reported leveling at the assigned altitude and was instructed to contact the tower. It was disturbing to review this system error and find that the pilot stated the incorrect altitude three times before it was caught.*

Ever happened to you?

Aircraft A was inbound from the east on the localizer course for runway 25L. Simultaneous ILS approaches were in use and aircraft B was being vectored for runway 24R. Aircraft B was given a heading to intercept the localizer course and was cleared for runway 24R approach. The pilot of aircraft B acknowledged the clearance, but read back runway 25R. By the time the controller noticed aircraft B was not going to intercept, it was too late to prevent the system error.

Ever happened to you?

It is alarming, isn't it? What are we — what are *you* — going to do about it? There are many avenues open.

The National Transportation Safety Board has recommended that we revise 71110.65A to require controllers to solicit altitude/vector readbacks when they are not voluntarily given by the pilot. AIM was recently revised to encourge these type readbacks (see AIM 1-51; ATC Clearance/Instruction Readback). We could also propose amending FAR 91 to require these type readbacks. But does this solve the total problem? No. A readback that does not receive the proper attention only adds to frequency congestion.

We could also drag out all our old Notices/ATS Bulletin Items, etc. on correct phraseology, obtaining acknowledgement, similar aircraft ID, concentration, lack of attention, etc. These apparently haven't done the trick, so perhaps we should try something new.

There has been one principle we have all tried to follow for some time. No one can remember where we got it or know who wrote it. In re-reading it, it occurred to us that it may have some application here. It is called:

"Listening: One of the Rarest of the Graces."

"Few people have had much experience in listening. The nature of most oververbalized professionals is in the opposite direction. Living in a competitive culture, most of us are chiefly concerned with getting our own views across, and we tend to find other people's conversation a tedious interruption of the flow of our own ideas.

"Hence, it is necessary to emphasize that listening does not mean simply maintaining a polite silence while you are rehearsing in your mind the speech you are going to make the next time you can grab a conversational opening. Nor does listening mean waiting alertly for the flaws in the other fellow's argument so that later you can mow him down. Listening means trying to see the problem the way the speaker sees it — which means not sympathy, which is feeling for him, but empathy, which is experiencing with him. Listening requires entering actively and imaginatively into the other fellow's situation and trying to understand a frame of reference different from your own."

The first paragraph is certainly applicable. Some of you may argue the point, but we think the second paragraph is equally applicable; even the second sentence if taken in a different context. You should alertly anticipate "flaws," but only so that they may be corrected. After all — you may have issued a wrong number in the first place. Remember, a clearance is not a clearance until it is transmitted, received and correctly acknowledged.

In re-reading what we have written (or "listening to our own thoughts"), perhaps we should retitle this article, "The Lost Art of Listening." The trend in our system errors certainly indicates it could be.

As you see, our worry has not lessened, but perhaps has become more directed toward a very serious problem area. Again, we ask that we all work together to perfect our proficiency in "The Art of Listening."

Our business is one of insuring safety, and as such, there is no place for assuming anything related to this function.

a Legacy of Safety

Capt Thomas N. McKnight, Jr.
1Lt Doyle K. Freeman
97th BMW, Blytheville AFB

During the evening of 20 August 1958, the 97th Bombardment Wing was involved in a night refueling mission over the Texas plains near Follett. At the completion of refueling, aircraft 52-267, a 97th B47, entered into a slight climbing turn to the right with 10° of bank. Suddenly an explosion ripped through the right wing sending the aircraft spiraling toward the ground. The bomber was lost with all but one crewmember parachuting to safety.

The next day began a legacy for the 97th Bombardment Wing. The men and women composing the 97th BMW through hard work and a safety minded attitude have reached a major SAC milestone: twenty consecu-

tive years of flying without a major aircraft mishap — no other operational wing in the Strategic Air Command can boast of equal accomplishment.

How did the 97th establish such an impressive record?

"Luck," might be the first thought in the minds of some. However, at Blytheville AFB, the 97th BMW feels it makes its own luck through hard work and a safety conscious attitude. "The men and women who make up the 97th Bombardment Wing are hard working, professional performers who realize the importance of a good attitude in a flying safety program," states Brig General Melbourne Kimsey, commander of the 97th BMW.

The General's philosophy that safety is brought about by hard work and the right attitude is evident throughout the entire wing. The aircrews, as well as the people in operations, maintenance and support work hard as a team to ensure that every day of flying is completed without mishap.

From an operations point of view, the policies of the Wing are indicative of a safety conscious attitude. Safe flying is synony-mous with mission accomplishment and crew coordination. Additionally, the hard work and extra effort expended by the wing and squadron safety officers, as well as the Standardization Division, are reflected by the Wing's flying safety record.

Capt David Thibodeau, standboard pilot, uses his checklist to insure all switches are properly positioned in the power off configuration.

One policy of the 97th which reflects the safety conscious attitude of the staff is their willingness to support an aircraft commander when he feels uncomfortable about the airworthiness of his aircraft. This same policy applies to personal problems of any crew member. In the 97th there is no pressure applied to force a crew member to fly when he may have doubts.

Colonel Hendsley R. Conner, Deputy Commander for Operations, sums it up well when he says, "We don't allow crews to fly when they have doubts about accomplishing the mission. We insist that they go directly to their commanders when they have a legitimate problem. The air is no place to be thinking about a personal problem or questioning the airworthiness of equipment." This same policy carries over to our crews when TDY. There the same attitude toward flying safety and safe practices is expected.

During the twenty years of mishap free flying, flying safety has become more than just an attitude; it's become a habit. According to Colonel Conner, "Safety is something we all must work at and in so doing, we in the 97th have developed good safety habits." As a result of this work, safety has become an integral part of mission accomplishment.

At the squadron level, Lt Colonel Peter C. Kelly, commander, 340th Bombardment Squadron, reports, "The men who make up the 340th aircrews are extremely professional and mission oriented." In his opinion, safety is an integral part of mission accomplishment that must begin at the staff level. Thus the commander must create an atmosphere for safety awareness, not only at commander's call, but during each individual mission.

Captain James A. Bowden, 340th Safety Officer, agrees but stresses that safety can never take a back seat to mission accomplishment: "Although the mission is always important, we never jeopardize safety to accomplish the mission."

In addition to mission accomplishment, the part that crew coordination plays in flying safety cannot be over emphasized. Lt Colonel James E. Leger, commander, 97th Air Refueling Squadron, points out that a cross feed of information in the aircraft is essential. He also knows that safety is a crew effort. Although the Wing and Squadron set the tone for the aircraft commander, and the aircraft commander sets the tone for his crew, the entire crew is still involved. In agreement with Lt Col Leger, Captain Gary A. Winterberger, commander, bomber crew E-19, commented, "Good crew coordination leads to cross checks that are an essential element of safe flying."

The Standardization Division serves in a quality control capacity and maintains the appropriate attitude toward flying safety. "It is our job to ensure that all crews are maintaining high safety standards and complying with safe operating procedures. We do this by evaluating each crew periodically," reports Major James R. Ames, commander of S-01 of the bomber branch, Standardization Division, when questioned about the quality control safety function of Stanboard. Captain Steven H. Andrews, commander of Stanboard tanker crew S-102, attributes a major factor of flying safety to an "aggressive" Stanboard. In his words, "Stanboard works hard to catch small problems early and correct them before it's too late."

Working equally as hard for flying safety are the

(Left) Amn James Edwards and A1C Caroll McCampbell check the fuel load with a dip stick before a flight. (Below) Diligently, a tanker crew chief readies his aircraft. (Below left) A KC-135 crew responds to a klaxon during a recent exercise.

hotos by: Capt Tibor Mazar, SSgt James Bolser, SSgt Al Harrison, and Sgt Rich Curry

Wing Safety Officer and Squadron Flying Safety Officers. Although day-to-day activities for the Wing Safety Officer are spelled out well in SACR 127-2, they are basic in nature and leave ample room for new ideas. Captain Travis W. Pittman, 97th BMW Safety Officer, has used that room to promote his own innovative ideas. Even though, for example, the regulation suggests reviewing the Quality Control and Evaluation Semiannual Analysis files, Captain Pittman goes one step farther and reviews the SAC form 126 for aircrew write ups. This allows him "To get a feel for the problems that continue to arise and appear to form some sort of pattern."

The Wing Safety Office has been instrumental in solving two problems, locally, that often plague SAC bases: VFR traffic and migratory birds.

Five civil airdromes and four private landing strips can be found within the radar pattern at Blytheville AFB. The safety office has contacted each field and acquainted civilian pilots with the base flying operations. The policy of "see and avoid" has been explained to all flyers, both military and civilian. Captain Pittman stated, "Our wing commander is a well qualified military and civilian pilot who avidly promotes our midair collision avoidance program every time he flys. He sets a good example for all flyers to follow."

Migratory water fowl regularly use the Mississippi River, located only 10 NM from the base, as an avenue for north/south travel. It is the goal of the safety office to deny the use of the airdrome and pattern as a sanctuary for the birds. The grass along the runway is cut no shorter than eight inches. This discourages the birds from foraging for food. In addition, the radar pattern was moved to avoid overflight of Mallard Lake and the Mississippi. Approach control also advises traffic whenever birds have been sighted in the vicinity of the pattern.

Joining the Wing Safety Officer in his efforts to promote flying safety are Captain Paul M. Moran, 97th ARS Flying Safety Officer, and 340th BMS

Continued on page 20

BIG INSTRUMENT

ENROUTE DESCENTS

Captain James M. Sullivan
Captain Lewis M. Hatch
1st Combat Evaluation Group
Barksdale AFB, Louisiana

Most military pilots have become intimately familiar with published high altitude penetration procedures. While these procedures remain essential for lost communications and radar out situations, many air traffic controllers prefer enroute descents for normal arrival handling. With our increased air traffic congestion and sophisticated radar environment, enroute descents reduce traffic sequencing problems and expedite traffic flow. The ability to fly an enroute descent efficiently requires a good working knowledge of a few basic procedures and techniques.

DEFINITION

Simply stated, the enroute descent is a means of transitioning from cruise altitude to the final approach of an established instrument procedure, without execution of the entire instrument approach procedure. This may be accomplished on radar vectors, or via a non-radar routing using suitable navigation aids.

PROCEDURES

Enroute descents may be requested by the pilot or initiated by the controller. However, controllers will not authorize an enroute descent if other than normal vectoring delays are anticipated, and the pilot may always decline an enroute descent in favor of any published high or low altitude approach procedure. Once initiated, the enroute descent may not be terminated by the controller without the consent of the pilot, except as required by radar outage or emergency situations.

Whether an enroute descent is pilot-requested or controller-initiated, insure that both you and the controller understand the type of final approach to be flown and confirm that the planned approach is compatible with your aircraft category and navigation equipment. Unless otherwise requested, single-piloted aircraft may expect clearance for approach procedures contained in FLIP Terminal High Altitude publications, while dual-piloted aircraft may expect clearance for procedures contained in FLIP Terminal Low Altitude publications. If the weather is IMC, coordinate the lost communications procedures *you would want to fly* should the situation arise.

Routing. Enroute descents may be flown via radar or non-radar routing. When being radar vectored to a final approach, all available aids should be used to remain position oriented. Altitude awareness and terrain clearance are particularly important during a radar vectored enroute descent, since published minimum IFR altitudes may not be available.

For enroute descents via non-radar routing, descent will be accomplished while the pilot proceeds along an assigned route using suitable navigation aids. For a single-piloted aircraft, this route will be predicated on nav aids appearing on FLIP High Altitude Terminal publications (including feeder facilities/routes).

For dual-piloted aircraft, routing may be predicated on any navigational aids published on FLIP Enroute or Terminal publications, either high or low altitude. If you don't carry low altitude publications, inform the controller.

Descent. Descents will be controller directed or "at pilot's discretion." In either case, it helps to know what to expect from the controller and what the pilot's responsibilities are.

For a controller directed descent, the descent point will vary with airfield location, enroute structure, traffic density, anticipated intermediate level-offs and individual controller techniques. Guidance given in the air traffic control handbook (FAAH 7110.65A) requires the controller to start an aircraft down at a point computed by taking the first two digits of the flight level (altitude in thousands of feet) and adding 10. An aircraft at FL 300 would be started down at 30 + 10 or 40 nautical miles from the field. This figure is based on a required rate of descent of 4,000 to 6,000 feet per minute. It is further predicated on a continuous descent (no intermediate level-off). Although you can normally expect descent clearance further from the field than this, monitor aircraft position carefully and keep in mind that the controller may bring you fairly close to the field before issuing descent clearance. Don't hesitate to tell the controller where you would like to start down if you wish to use a reduced rate of descent.

A descent granted "at pilot's discretion" gives the pilot greater flexibility. When the controller directs a descent, you are expected to depart assigned altitude upon receipt of the clearance. When cleared at pilot's discretion, you may depart the assigned altitude when *you* wish, determine your own desired rate of descent, and level-off at any intermediate altitude desired. The only thing you can't do is reoccupy an altitude already vacated.

Regardless of whether you are cleared for descent at pilot's discretion or are directed to descend by the controller, you should maintain an airspeed relatively close to cruise airspeed or inform the controller of any large change. A drastic decrease in airspeed during the descent will cause an accordian effect in his planned traffic flow. This will result in delays for you, or aircraft following you, as the controller will have to employ vectors to gain traffic sequencing. The ideal situation is to maintain cruise airspeed until you approach 10,000 feet MSL. At that time reduce airspeed below 250 KIAS, unless your flight manual requires a higher speed. The Airmen's Information Manual points out that controllers *expect* you to level off at 10,000 feet MSL to adjust airspeed. *You are not required to notify the controller of an intermediate level-off at 10,000 feet MSL to adjust airspeed.* As an example, if cleared to descend from FL 240 to 8,000 feet, the pilot should approximate his cruise airspeed until approaching 10,000 feet MSL. He may then level off at 10,000 feet to adjust airspeed below 250 KIAS, without notifying the controller. Once the airspeed is below 250 KIAS, he may continue descent to 8,000 feet.

TECHNIQUES

Once the few basic procedural requirements of an enroute descent are understood, successful execution of the maneuver becomes almost entirely a matter of technique. And for this particular maneuver, there are as many different techniques as there are pilots and airplanes. For aircraft configuration, drag devices, airspeeds, rates of descent, etc., refer to your flight manual. The remainder of this article will address some general techniques that will facilitate selecting desired descent points and rates of descent, and will assist in monitoring your progress during the descent. Some pilots use all of these techniques at various times, while others prefer to pick one or two that normally work for them. While we will present them in fairly simple format, you can make them as sophisticated as you wish. Consider including FAF altitude and FAF distance from the field in your computations.

Start Descent Point. The first figure that a pilot should be able to compute is the start descent point. When issued a descent at pilot's discretion, it's totally up to you to initiate the descent. Under other circumstances, computing this figure will enable you to request a start descent point that will allow a comfortable penetration profile.

Most pilots prefer to select a rate of descent they wish to maintain and work from there. Two thousand feet per minute seems to be a comfortable rate for most people. If you are flying at FL 330 and wish to descend at 2,000 feet per minute to a 3,000 foot FAF altitude, it will take you approximately 15 minutes to make the descent.

($\frac{\text{30,000 feet to lose}}{\text{2,000 feet/min}}$ = 15 minutes). Multiplying 15 minutes by your speed in miles per minute will give you the distance you should travel in that time. Your speed in miles per minute can be approximated by multiplying your mach number times 10. Let's say you're doing .7 mach. That's seven miles per minute (.7 x 10) times 15 minutes, or 105 miles. If you want to be down to final approach fix altitude 10 miles from the field, add 10 to 105 and start descent 115 miles out. Remember that these figures are an approximation. It takes time to establish a rate of descent, so you may want to add some kind of pad. Also, using the Mach number is quick and easy, but it doesn't account for winds. If you wish to take existing head or tail winds into account, determine miles per minute by dividing the groundspeed by 60 ($\frac{\text{420 KGS}}{60}$ = 7 miles per minute GS).

Utilizing a descent gradient is another method for determining a start descent point. A descent gradient of 3° or 300 feet per nautical mile is a popular figure. Dividing your altitude by the gradient will give the distance from the field at which you should start down. At FL 300 you should start down at $\frac{30{,}000}{300}$ or 100 nautical miles (once again, add any desired pad to that figure). To determine required rate of descent, multiply the gradient times miles per minute. Therefore, 300 feet per mile times 7 miles per minute would require a descent rate of 2,100 feet per minute. One added feature of the descent gradient is that it will tell you what pitch change to make for the descent. Since 300 feet per mile is considered a 3° gradient, adjust the pitch 3° from the level flight altitude. If you were straight and level showing 2° nose up, 1° nose down pitch should give you 2,100 feet per minute at the same airspeed and configuration.

If you have been unable to select your own descent point, the problem will be to determine a descent rate that will allow you to reach the assigned altitude without extensive vectoring. Again, this involves determining the required gradient, pitch change, and rate of descent. If the controller starts you down from FL 300 at 60 nautical miles from the field, the gradient required is $\frac{30,000}{60}$ or 500 feet per mile. That gives you a 5° pitch change and 500 x 7 or 3,500 feet per minute rate of descent (assuming we are still flying at 7 miles per minute).

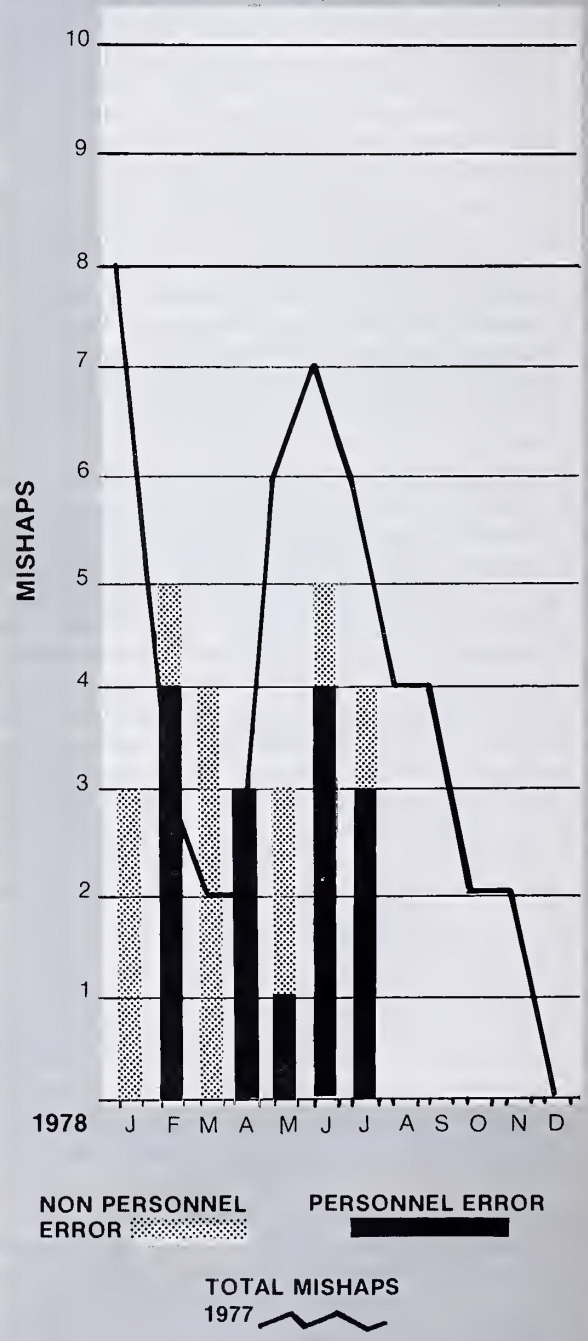
Monitoring The Descent. Just as you must crosscheck and adjust heading while flying fix-to-fix, you must monitor the descent and adjust descent rate during most enroute descents. Altitude restrictions, delays in establishing your computed rate of descent and vector headings may all complicate the problem. Additionally, true airspeed (and thus groundspeed) will change for a given indicated airspeed as you descend. So, as you descend, you should occasionally check your progress and make any necessary adjustments. Simply crosscheck altitude and distance and determine the new gradient, and with your current speed in miles per minute, arrive at a new rate of descent. In our previous example, we computed 3,500 feet per minute from FL 300 and 60 miles out; if you now cross 30 miles out at FL 200, your new gradient required is $\frac{20,000}{30}$ or 670 feet per mile. Round that off to 700 feet per mile and multiply it by your new speed of 6 miles per minute. You now need to come down at 4,200 feet per minute. Making these minor adjustments should ensure the success of your enroute descent.

PLANNING

The key to any successful enroute descent is *planning*. Planning for the approach you intend to fly, planning and coordinating lost communications procedures, and planning the descent itself are all essential. The techniques we discussed were presented in basic form and may be modified to fit your needs. Whatever technique you use, it's usually better than just pointing the nose at the ground and hoping for the best.

Missile Mishap Report

DOD CLASS A, B and C



ACE TOPICS

SEE AND AVOID — A recent incident has brought to light this vital concept concerning survivability of the T-37 in the PCA. A flight of two Tweets under the able command of Darth Dingleberry, with Abe Bee Juan Can Obe hanging on the wing, were maliciously attacked by a flight of two Bolts, lightning (max speed Warp 1, turn radius 0 at max speed). The T-37 IPs, failing to clear, did not see the Bolts closing from the stern high. Since the Tweets were cruising at 99% max range — Warp .0000005159 — the Bolts had two advantages: (1) they had more smash, since they were higher and faster, and (2) they had the element of surprise. And surprise they did, as the lead Bolt scored a direct hit on the Tweet lead's left wing and snuck out the ailerons and left elevator. While Tweet two was busy "gee whizzing" St. Elmo on his lead, the second Bolt scored a direct hit on his no step sign.

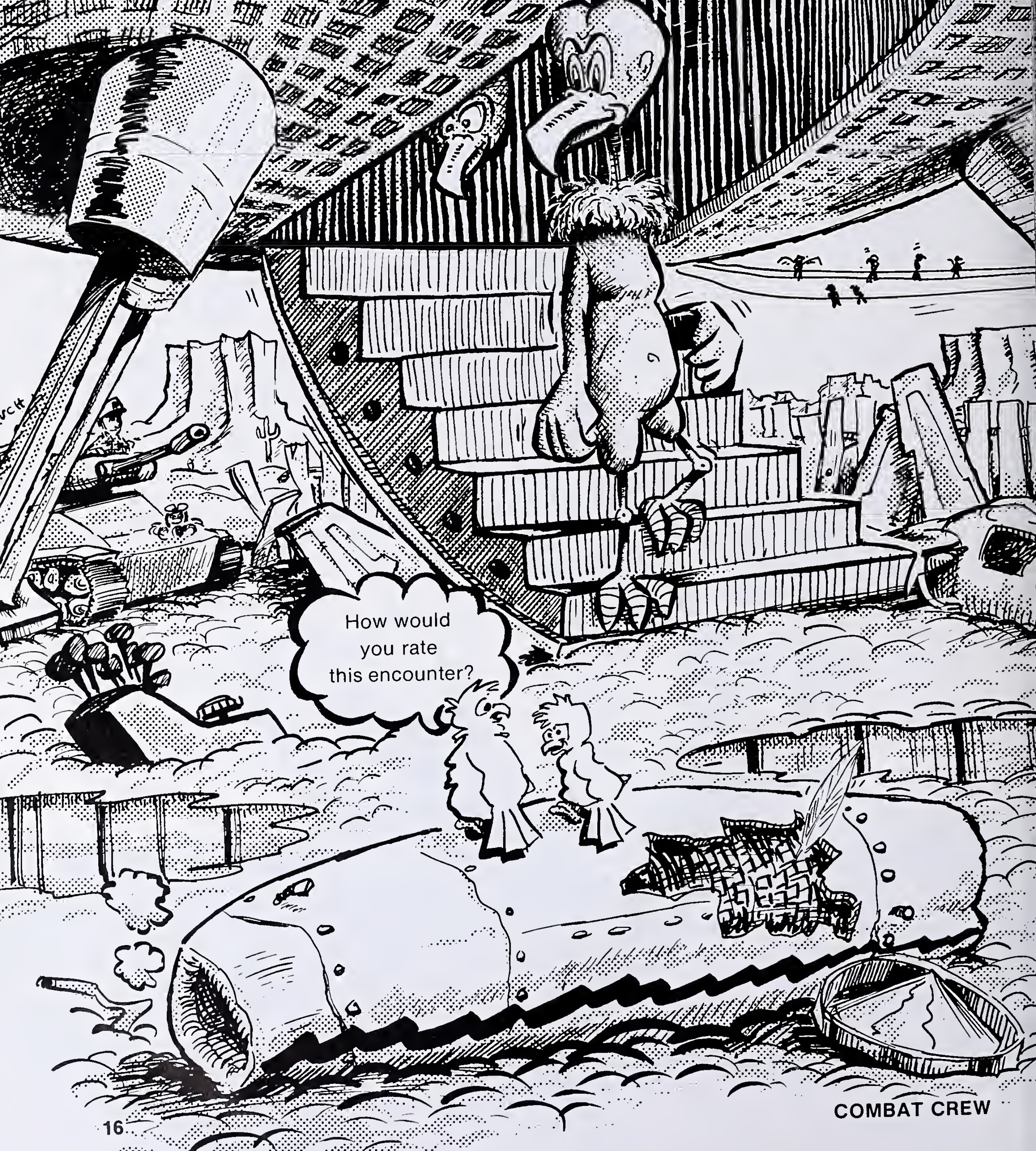
Even though we're slower and less maneuverable than the Bolts, we have the distinct advantage in that our GCI controllers (call sign — Metro) are able to semi-accurately identify and fix these rascals.

Know the enemy: Fight him on your terms, not his! The Bolt, lightning, operates most effectively at or near the freezing level. Don't engage him there. The Bolts usually stage out of thunderstorms. Stay well clear of the staging area. If the Bolts are grounded because of weather, they'll hide behind black clouds and throw stones at your machine. If you think dodging lightning is tough, try ziggying in between hail sometime.

You can also listen to your wingman: If he says you have a long skinny yellow bogey closing fast — duck.

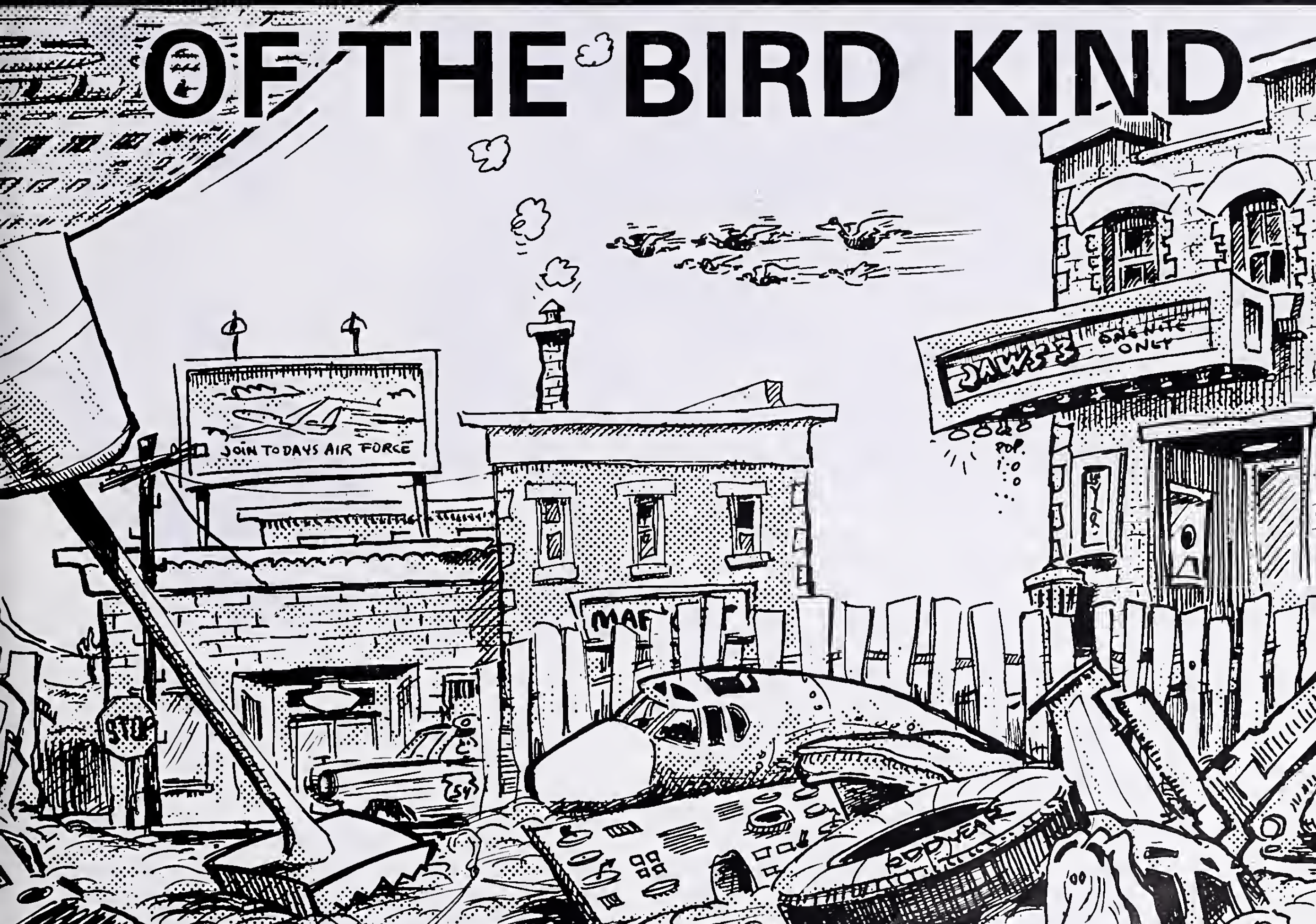
Capt Gregersen
71 FTW, Vance AFB

CLOSE EN



How would you rate this encounter?

COUNTERS OF THE BIRD KIND

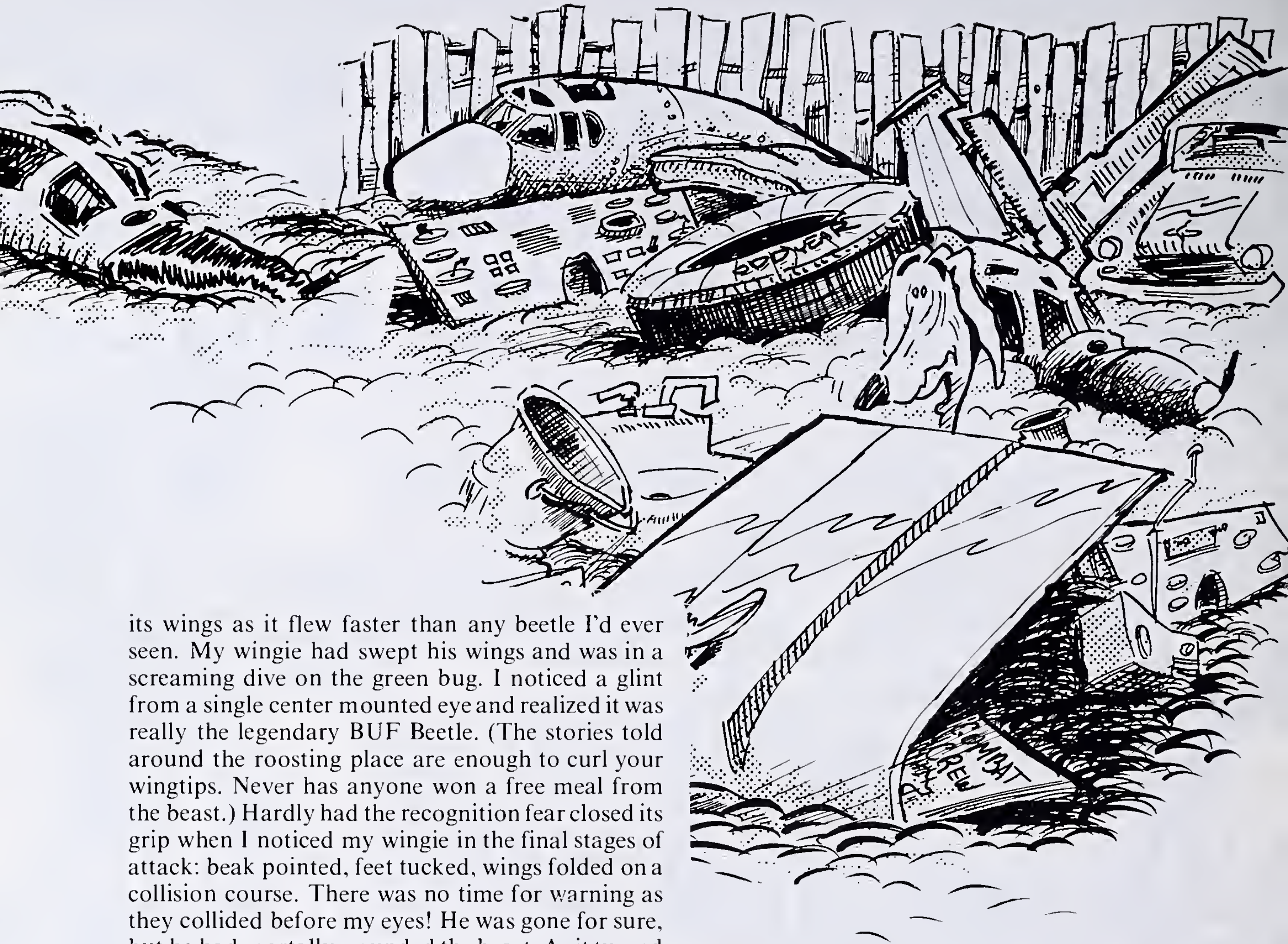


Capt Samuel I. Stokes
68th Bomb Wing, Seymour Johnson AFB

NOTE: The following is an intercepted message from Eagle 1 Squadron.

This meeting will come to order. All right, you turkeys — stop that gobbling, we have an important intel brief to chirp about. Here with the straight feathers is Col Eagle who just winged in from Headroost.

Thank you, Capt Condor. Fellow birdmen, I have grievous news to share. During my flight here, I had just made a left wheeling turn when my wingie called, "I have a large green bug at 4:30 low, closing fast, I'm engaged." I reversed my turn, added one flap of power, and picked up one of the largest beetles I had ever seen. There was no obvious flutter to



its wings as it flew faster than any beetle I'd ever seen. My wingie had swept his wings and was in a screaming dive on the green bug. I noticed a glint from a single center mounted eye and realized it was really the legendary BUF Beetle. (The stories told around the roosting place are enough to curl your wingtips. Never has anyone won a free meal from the beast.) Hardly had the recognition fear closed its grip when I noticed my wingie in the final stages of attack: beak pointed, feet tucked, wings folded on a collision course. There was no time for warning as they collided before my eyes! He was gone for sure, but he had mortally wounded the beast. As it turned rapidly and started a considerable slower climb towards its nesting place, revenge chilled my wings. One day, one of us will bring down the legendary BUF Beetle; it is only a matter of time.

Needless to say, fellow birdmen, that bird has been placed in the Feathered Aces Hall of Fame for conspicuous gallantry while attempting to rid our skies of all foreign objects. Last year alone, we enshrined 260 of our fine fearless feathered friends in the Hall. My Chripees told me that 52 of those were put in for BUF Beetle and Silver Beetle encounters. There were numerous others, but those were the ones who inflicted damage upon our enemies. They inflicted damage to the tune of $584,990, which is a lot of broken eggs.

I understand these beetles are trying to protect themselves from us, they must have loon fever. We have really ruffled their feathers, just listen. They have developed a program to reduce the bird strike hazard.

The Bird Strike Hazard Reduction Program — it even has three main points for reducing damage: (1) Bird control; (2) Bird avoidance; and (3) Aircraft design. It is believed that by using the right combination of their three main points, bird strike hazards can be greatly reduced.

The bird control aspect involves surveying nesting places to determine why we congregate there. Once determined, they implement a plan by using environmental controls, bird dispersal techniques, warning systems, and operational procedure changes to reduce hazards.

Of course, the most severe hazard is when we meet in the air. Bird avoidance involves instruction on how to avoid us. They are cautioned to be aware of our migratory routes, always to fly with their helmet visors down, and to stay above 10,000 feet AGL as long as possible. There are numerous other tips their flying safety officer has access to. They only need ask and they will be told.

Thirdly, they are planning to develop bird strike impact-resistance guidelines in future designs to cover all the now vulnerable areas we aim for. This will definitely reduce our chances of downing 'em.

Okay, chirpees, the beetles are gearing up for war. If that is what they want, we are prepared to fight to the last bitter beak and feather to defend our skies! I must leave you now, but your mission is clear. We at the headroost are depending on you!

A KC-135 crew chief checks all systems and coordinates the efforts of his ground crew from the cockpit.

A TEAM EFFORT

Continued from page 5

veloping a schedule everyone can live with can be accomplished only when the rapport between maintenance and operations produces the type of environment where the needs of both are balanced to achieve optimum results for the wing. There is usually an element of conflict involved in the scheduling process. That is as it should be. If our resources to do the job allow us to do it with little managerial effort, then we are wasting resources. However, if we consistently overextend maintenance capability, we increase accident potential and degrade mission effectiveness. If we fail to provide adequate sorties, crews cannot maintain the degree of proficiency required to insure flight safety and mission accomplishment. The key to success is working together to maintain the highest state of readiness possible.

Just as a close working relationship between operations and maintenance at wing level is essential, we cannot do our job as a Command headquarters without the same type of cooperation. Our joint efforts have resulted in the development of new and revised maintenance management concepts to provide greater flexibility and systems improvement programs to upgrade our equipment. These initiatives are part of an ongoing effort to use our limited resources to best advantage while improving our readiness posture. We are working closely with our counterparts in the Air Force Logistics Command (AFLC) and have developed new management programs to enhance the interface between SAC and AFLC. Significant logistics problems that impact readiness are given high-level visibility and the personal attention of SAC and AFLC managers.

Our efforts to improve readiness are working. We tested the Contingency Maintenance Concept (CMC) for the KC-135 during GIANT THRUST I at McConnell AFB in January. The CMC test conclusively demonstrated that we can "surge" to produce a significantly increased sortie rate when required to support temporary emergency operations. This capability may very well be the difference between success and failure in future contingency operations.

We are also closely monitoring the effects of other changes in our way of doing maintenance, and the indicators show that we are being successful. The quality of our maintenance as reflected in the FY 78 Maintenance Standardization and Evaluation Team results show an upward trend, and the maintenance cancellation rate for most of our wings is well within acceptable limits. The progress we have made in improving our readiness posture is a direct reflection of the outstanding cooperation between operations and maintenance at all levels. The challenges that still confront us make it even more important for each of us to sustain that spirit of professional teamwork. ★★

Continued from page 11

A LEGACY OF SAFETY

Flying Safety Officer, Captain Bowden. Captain Moran emphasized the importance of working to maintain the right attitude when he said, "The squadron safety program works hard to be on constant guard against complacency and the attitude that it couldn't happen to me."

Captain Bowden explained his and Captain Moran's function as safety officers; "It is our job to disseminate the latest flying safety information from the higher echelons to the aircrews. We also serve as a direct liaison between the aircrews and the staff."

Hard work and a safety conscious attitude are important in operations, but maintenance works equally hard and takes to heart a safety minded attitude.

The idea that safety comes about through hard work and safety consciousness is evident on the ground when one walks through the maintenance hangers or strolls onto the busy flight line. Colonel Conner puts it well, "On the ground before a flight, operations and maintenance work hand in hand to ensure that a good safe airplane is ready to accomplish the mission. The cross feed of information between maintenance and operations is extremely important."

General Kimsey and Lt Col Dennis, 97th OMS Commander, meet with 97th crew chiefs during a recent Buy None.

Chief Master Sergeant Michael F. Gardella echoes this sentiment when he states, "The best cooperation between maintenance and operations that I've ever seen takes place right here in the 97th Bomb Wing. There's less friction between the aircrews, the crew chief, and the maintenance specialist. The respect between these people forms the basis for a smooth working relationship."

The crew chiefs of the 97th also feel that safety begins on the ground. Staff Sergeant Daniel J. Beal, a B-52G crew chief states, "Most crew chiefs have been assigned to a single aircraft for an extended period of time. Consequently, they know their airplane. We take a great deal of pride in our work and try our hardest to get these planes in the best possible shape for each flight. After all, flying safety begins here on the ground with a good safe aircraft." Sergeant Beal also emphasizes the importance of improvement through experience. "The maintenance program at Blytheville has been constantly improving. We have a large number of Master Crew Chiefs and Master Technicians. These people are extremely safety conscious and set good standards for our younger personnel."

The quality control of maintenance ensures that these high standards are met. Captain Lee F. Blitch, Chief of Quality Control, states, "The very strict and thorough quality control at Blytheville AFB is considered to be one of the best in SAC. Once each year every squadron is given a saturation inspection in depth."

Perhaps Colonel Douglas B. Brittain, Deputy Commander for Maintenance, summed it all up well by saying, "The people at Blytheville are truly professional and expert. There is much permanence in the maintenance section locally. Much cross training takes place within the maintenance field with the end result that there are many people with extensive knowledge of numerous aspects of maintenance. This knowledge produces greater safety."

Although operations and maintenance are often credited with the excellent flying safety record, the hard work and excellent attitude of the support personnel must not be overlooked. That profession-

(Above) Crew chiefs of the 97th proudly watch as the first bomber launches on its Buy None mission. (Right) Each flight of the 97th is preceded by a complete and thorough briefing. Capt Jon Hantke, navigator for Crew E-21, points out emergency airfields suitable for inflight use to crewmembers; from left, Capt David G. Aldrich, Sgt Russell B. Combs, Capt Butch Hite, 1Lt Thomas McDonald, and Capt Gary Boyetle.

alism displayed in the Communications Squadron and Air Traffic Control Operations (RAPCON) is closely aligned with flying safety, is an easy concept to ascertain. Likewise, it is not inconceivable that good, safe equipment provided and serviced by the Supply Squadron, Aircrew Life Support Branch, and Fabrication Branch, is a factor of safe flying. A safe and secure working environment, provided by the Security Police Squadron, is conducive to a safe flying attitude. An excellent Civil Engineering Squadron ensures that an aircraft accident could not be traced back to a ground problem dealing with inadequate facilities. The Transportation Squadron, too, does its job by providing prompt, safe ground taxi service thus allowing aircrews to start thinking ahead about their flight without worry for their welfare on the ground.

The Flight Surgeon's Office also does its share to support flying safety. Lt Colonel Edward T. Schwab, Chief Flight Surgeon, is always willing to discuss physiological flying incidents at any safety meeting. He also briefs the flying squadrons on a regular basis about any new medical advances or discoveries that could affect the physiology of flight. His close cooperation with aircrews encourages a rapport that is needed if a flight surgeon is to closely monitor the physical condition of his flyers.

Although it is fairly easy to see how some support agencies directly support flying safety, it is often difficult to realize that many support agencies still support flying safety even though their support may be indirect. Past psychological studies have shown some correlation between flying safety and morale. Studies show that crews with low morale are more likely to experience an accident than crews with high morale. Therefore agencies promoting morale are indirectly supporting flying safety.

When one thinks of morale, the Morale, Welfare, and Recreation Division or perhaps the Officers'

A good preflight, even while on alert, is a necessary requirement of flying safety.

Club or NCO Club comes to mind. These three agencies definitely stimulate good morale, yet other agencies do as much but are recognized for it less often. These include, but are not limited to: Accounting and Finance, CBPO, Personal Affairs Unit, Education Section, Staff Judge Advocate's Office, Library, Gymnasium, Inflight Kitchen, Recreation Branch, and the Chaplain's Office. All of these agencies do their part to boost morale in one way or another.

Although much credit for the twenty year flying safety record is due to the hard work and attitude of the staff, aircrews, maintenance and support personnel, a great deal must be attributed to the planners who wisely selected Blytheville, Arkansas as the home of the 97th BMW. The ideal location of the base allows flying operations to avoid most adverse weather, high terrain, and the evils associated with a metropolitan area. These factors, no doubt, have contributed to the excellent safety record of the Wing.

Although the base is located south of the 36th parallel, its temperatures seldom rise high enough to cause major problems since the field elevation is only 255 feet. The average daily high temperature is only 69° with the average high temperature for the hottest month, July, at 90°F.

Runway conditions at Blytheville are generally good. Although wet runways are not entirely uncommon, there are very few days annually that the 97th experiences snow or ice on the runway. Even though the average annual rainfall is 47.2 inches (3.93 per month), there are only an average of 67 days per year that temperatures reach freezing. The average low is 50°F. In addition, the base receives only eight inches of snow during the average winter. This eight inches is usually spread out over several small snow falls allowing ground crews to keep the runways clear of snow.

Visibility can hardly be considered a problem at Blytheville. Only 16% of the time is the ceiling less than 3,000 feet and visibility less than three miles. The ceiling is greater than 200 feet and visibility greater than one half mile 99% of the time.

The winds cooperate extremely well with local flying operations. The average wind is only six knots. Nine months of the year the prevailing wind is out of the south while the remaining three months favor the north. Although Blytheville has only one runway (18/36, 11,600 feet long), take off winds are optimized. This allows the aircrews to generally avoid crosswind take offs and landings and at the same time avoid the dangers associated with conflicting traffic on parallel or crossing runways.

Blytheville AFB is located in the flat Mississippi River basin. Consequently the nearest terrain that rises above 1,500 feet MSL is over 100 NM away. In addition, there is only one obstruction above 400 feet AFL within 20 NM. Few SAC bases can make both statements.

This absence of high terrain or obstructions means safety through simplicity in local flying procedures. The base uses only three relatively simple SIDs (all flown from either runway) with few restrictions. The approaches, too, are relatively simple when compared to instrument approaches at other bases that have complicated restrictions and procedures.

In addition, the nearest low level military training route is nearly 60 NM away thus presenting no problem for departing or arriving traffic.

The base is located 50 NM from Memphis, Tennessee, the nearest metropolitan area. As a result the nearest controlled airport accommodating major air carriers is 55 NM away. This means descending airliners in the Blytheville control zone are not the problem that they are at some SAC bases. Additionally, the absence of a local metropolis means visibility is not obscured by smog.

Although Blytheville is an excellent base location, the 97th BMW has not always been located there as Wing history shows.

Since 20 August 1958, the 97th BMW has flown over a quarter of a million hours in six different aircraft (B-47, B-52, KC-97, KC-135, T-29, and T-37) without a major aircraft mishap.

Included in this time was a brief non-flying period during which the Wing changed bases and an 18 month period during which the Wing conducted only bomber operations while waiting for delivery of their first Boeing KC-135.

Although the Wing deployed TDY to Southeast Asia for combat duty, no major aircraft accidents were recorded while away. The Wing did, however, suffer the loss of two B-52G's through enemy action.

With the exclusion of the involvement in SEA, the mission of the 97th Bombardment Wing has been one of strategic deterrence since 1950. At that time the Wing was located at Biggs AFB, Texas and equipped with Boeing B-50 bombers and KC-29 tankers. In early 1954 the aging KC-29's were replaced by the Boeing KC-97 Stratotanker. The next year the Boeing B-47 Stratojet replaced the B-50's making the 340th Bombardment Squadron an all jet force.

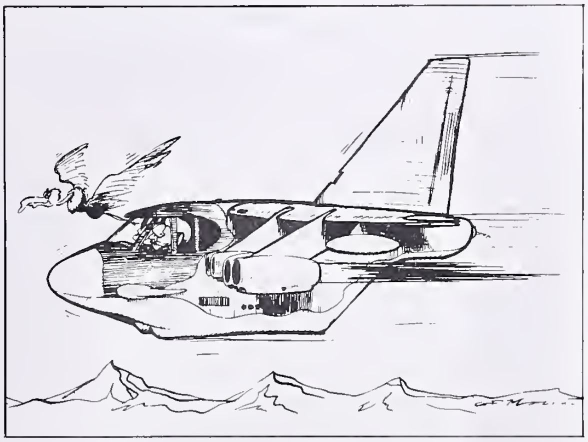
On 1 July 1959 the Wing was moved from Biggs to Blytheville AFB, Arkansas. In December of that same year the Wing received its first B-52G and promptly named it "The City of Blytheville" in honor of the Wing's new home.

On 12 January 1962 the first Boeing KC-135 arrived at Blytheville. On 18 January of that same year, the first of many inflight refuelings between a 97th KC-135 and a Blytheville B-52G took place. Since that time Blytheville tankers have averaged over 13 million pounds of fuel transfer annually and flown over 17,000 sorties. The 340th BMS has amassed over 15,000 sorties free of major aircraft mishaps in the B-52G.

In the past the Wing has been recognized for its flying safety. In 1962, 1964, and 1966 the 97th BMW received the *Combat Crew* Hall of Fame Flying Safety Award. In August, 1972, the Wing earned the National Safety Council Award for its safety program.

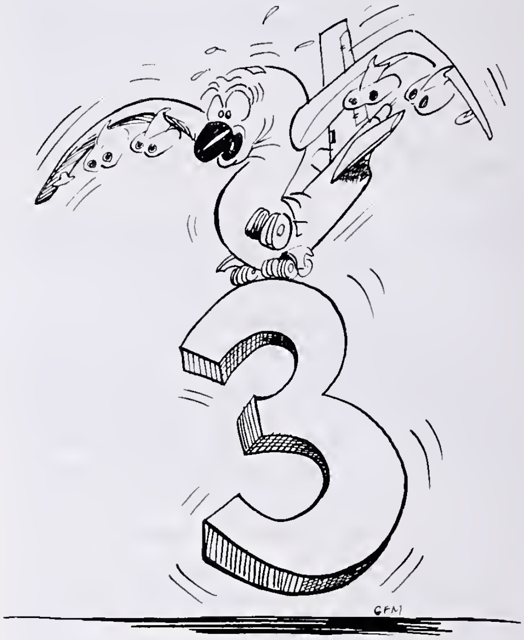
The flying safety accomplishments of the 97th have complemented the awards won by the flying squadrons for their outstanding performance. Topping the list is the 8th Air Force Awards for Outstanding Bombardment and Outstanding Air Refueling Squadron for 1977. In addition, early in 1978, the Wing was awarded the Outstanding Unit Citation.

The Wing is proud of its accomplishments and awards. It is proud, too, of its people, be they in operations, maintenance, or support. It is these people, with a little help from the environment, whose hard work and safety minded attitudes have given the 97th Bombardment Wing a legacy upon which to build, twenty years of accident free flying!



The Nav was right. That bird is on the flyway to Blytheville.

OPS HAZARDS



B-52 LANDS ON THREE . . . A B-52D experienced inflight loss of the number one hydraulic pack and standby pump. During the first bomb run, the doors opened at 10 seconds for a synchronous release. After the release, the doors closed normally, but the main hydraulic failure light illuminated. A check showed no pressure on number one system, but number two and four showed normal pressure. The crew elected to leave the doors closed for the rest of the runs.

After completion of the bomb runs, the crew initiated emergency checklists. Neither the main nor standby hydraulic system would produce pressure on the number one system. The crew inspected the number one pack area and found hydraulic fluid around the main pack. The crew suspected a leak in the hydraulic lines. The command post convened a hotel conference, and all parties agreed that the crew should reduce fuel weight, not attempt emergency gear extension and land with the three extended gear.

The crew began the approach with approximately 20,000 pounds of fuel. The aircraft landed uneventfully at the 10,000-foot remaining marker and the crew allowed the aircraft to roll to a stop without using brakes.

The pilot jettisoned the drag chute after 300 feet of roll because crosswinds pulled the chute toward the retracted gear. This increased the heel-over effect of the aircraft and added stress to the left tip gear.

After landing, maintenance pinned the extended gear. They then lowered the retracted gear, pinned it and towed the airplane to parking. Subsequent inspection revealed a broken hydraulic fuse. The hydraulic fluid apparently escaped from this fuse sometime during the first bomb run.

BOOM TROUBLE

A KC-135 was unable to stow the boom during the boom maneuverability check prior to air refueling. The boom, when raised past 20° elevation, would swing to 20° right azimuth. Refueling was not attempted and attempts to stow the boom using normal and emergency procedures were ineffective.

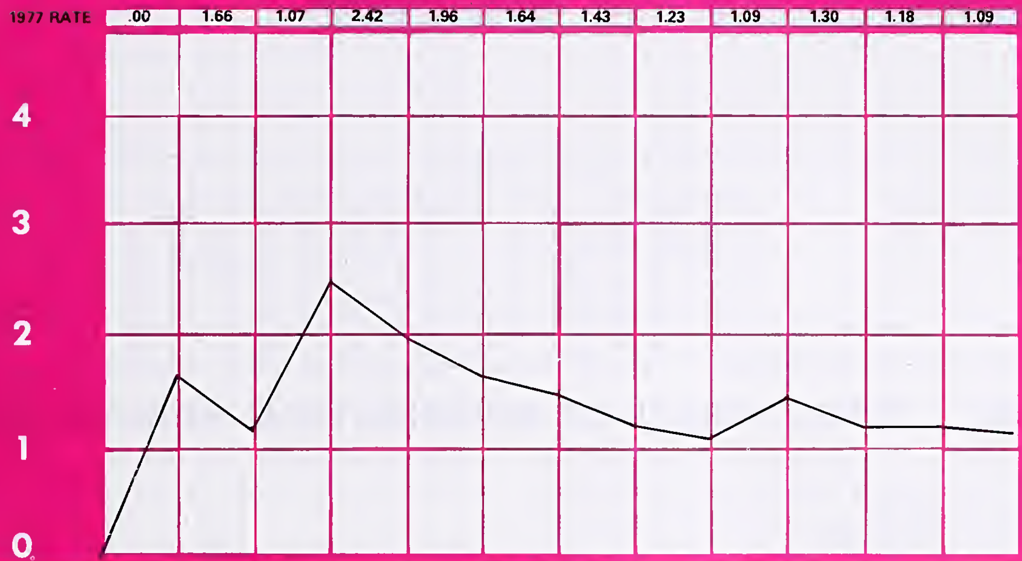
The investigation revealed: 1) Panel R-24 was removed during a phase six inspection. (No longer required by revised phase six checklist.) 2) Stencil number 25 prescribing screw size requirements was not in place. 3) When the panel was reinstalled, only NAS 517-3-3 screws were used making several screws too long. 4) One of these screws restricted movement of the boom controls. 5) Repeated attempts to stow the boom caused a gouge mark in the right control ruddevator boom quadrant and eventually allowed the boom controls to become free.

Phase inspection personnel have been made aware of the need to use proper sized screws in this area. A final recommendation was for all KC-135 aircraft to be inspected for proper stenciling and restenciling if required, and that proper stenciling became a special emphasis inspection item during corrosion control inspections.

Continued on page 30

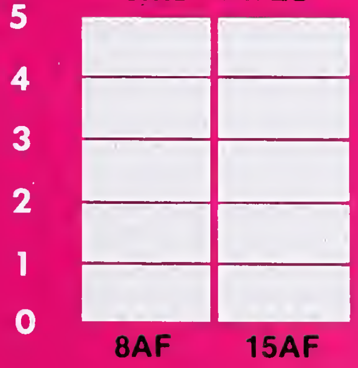
1978 Flying Safety Rate

SAC CLASS A MISHAP RATE (PER 100,000 FLYING HRS)



MISHAPS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1977	0	1	0	2	0	0	0	0	0	1	0	0
1978	0	0	0	0	0	0	0	0				

1978 SUBORDINATE CMD RATES



LEGEND ⁀ =1977 RATE

MISHAP STATUS

r&d corner

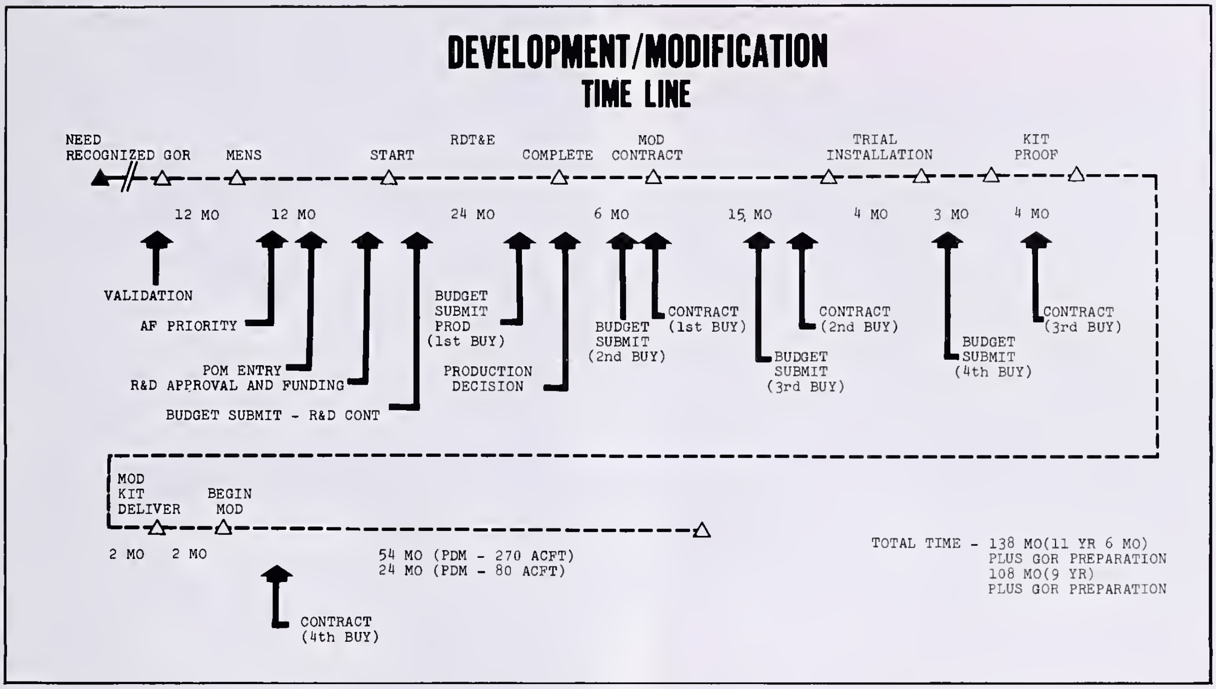
HQ/SAC — DIRECTORATE OF AERONAUTICAL REQUIREMENTS

Maj William D. Fritz, Jr.
HQ SAC/XPHN, Offutt AFB

The R&D Corner for the past year has been attempting to provide you with a near real time update in the world of R&D and equipment acquisition as it applies to SAC. Although we have been somewhat limited in subjects due to classification and other material release restrictions, preceding articles hopefully have aroused some curiosity. The age old question of "Why does it take so long?" would certainly be a candidate. Add to this "How?" and "What are the steps?" and there is material enough for a book (to be addressed here in pages).

The acquisition process, for a single "black box," system modification or major system purchase, begins with a perceived need. The Command Statement of Need (SON), formerly known as a ROC or GOR, is then prepared to express those needs by the responsible agency which, in SAC, is usually Deputy Chief of Staff/Plans (XP). It is however, a coordinated command document which requires validation by Air Staff before any real action can be taken. If that process culminates in approval and if the requirement is high enough on the using command's priority list to exceed the threshold for available dollars, funding is requested in the next budget cycle (usually three years into the future). Bear in mind that Statements of Need are just now nearing publication in response to needs perceived a year or more ago, but will probably not be funded until FY 81. Beginning to get a feel for the "how long?" We have typically consumed four and possibly five years at this point and have gone no further in product development than that achieved by a contractor's internal funding or that sponsored by such agencies as the Air Force Avionics Laboratory.

When funds are finally made available, the results of several years of planning get underway. This is not to say that action will be swift. First the requirements must be defined more precisely and a Request for Proposal (RFP) issued by the government. Upon receipt of responses from industry, the developing agency within Air Force Systems Command will proceed with definitions of the precise work to be done (Statement of Work) and negotiates a contract. You guessed it! This does not happen overnight and usually involves multiple contractors, but finally we are ready to begin hardware development. If adaptation of commercially available equipment (KC-135/KC-10A/SPN/GEANS, etc.) will suffice, the time required and risk involved is significantly less than for developments which attempt to advance the technological state of the art (B-1, FB-111, ECM equipment, etc.). In the latter


DEVELOPMENT/MODIFICATION
TIME LINE

case, two or more years are typically required for "black box" development. Major systems such as the B-1 require close to a decade. In both cases, it is still short of flight test. Still counting? Roughly seven years to end of flight test for subsystems with major new systems going well over a decade (try computing that inflationary effect). Many of you have been either directly or indirectly involved in this process, sometimes without knowing it. Fortunately, most flight test efforts result in favorable production recommendations and development can shift into the final stage before production. Some continue development to correct identified deficiencies and, unfortunately, some are cancelled for any one of many reasons.

Well, you guessed it again; still not ready to install equipment. Now begins the pre-production effort. Systems are built which should represent production units and performance. These are tested in excess of 1000 hours to insure they comply with the polyglot of MIL SPECs which cover just about everything: temperature extremes, humidity, pressure, salt spray, dust, fungus, etc. The procuring agency must insure that all parts are standard, if possible, and are available from multiple qualified sources. Will the systems still meet performance requirements after 1000 hours? Are the involved contractors equal opportunity employers? If all of this and more are acceptable, negotiations finally begin for a production contract. Air Force Logistics Command (AFLC) prepares estimates of cost while HQ USAF insures that the funds are available, that the program is in fact ready for production and publishes the last of many Program Management Directives (PMD), this time for the production program. Contracts are negotiated and schedules are aligned to precisely meet the available funding profiles. Finally after Air Force and Congressional review, it's official. The equipment is in production. After typically 18 months, the first article is delivered and we finally get to bend-tin on the kit proof aircraft. This is the effort to insure that all brackets, wires, cables, nuts and bolts are right and, if not, results in a change to the installation kit. Then, and only then, the first aircraft undergoes modification efforts which, for the B-52 fleet, typically requires four years.

Well, that's the acquisition process in an extremely simplified form. We addressed only the Class V modification process and neglected many of the nuances such as QRC, Avionics Laboratory efforts, Class II, Class IV, Engineering Change Proposals (ECPs), Statements of Work, the Aero-medical Research Laboratory, or the efforts required of numerous divisions throughout the Air Force or the efforts of the many involved individuals. That should be the subject of a not yet written encyclopedia.

WE GOOFED! The picture of the B-52 RN's station at the top of page 13, Aug 78, *Combat Crew* is upside down. We apologize to all you radar operators — you're not going to have to stand on your heads. Ed.

PROFESSIONAL PERFORMERS

Individuals selected for these pages as SAC's top professional performers of the month are chosen from nominations made by all SAC units. Selection is made only after all nominations have been carefully screened and those chosen meet the highest standards of excellence outlined in SACR 127-2.

Titan Crew R-036, 308 SMW, Little Rock AFB: MCCC Capt James M. Pirkle, DMCCC 2Lt Ronald C. Adams, MSAT A1C Rodney L. Holder, and MFT A1C Kenneth L. Wood.

SAFETY MEN — Flying safety officers of the 380th Bomb Wing, Capt David K. Testerman and Capt Richard R. Golden have upgraded the wing safety program to the point that it was recognized by the 8th Air Force staff assistance team as the best tactical squadron flying safety program in 8th Air Force. Their efforts increased attendance and awareness in the flying safety program. In cases where individuals were not able to attend meetings, Captains Testerman and Golden personally briefed the individual concerned. They also developed a local incident read file that allows quick feedback to the aircrews on local problems.

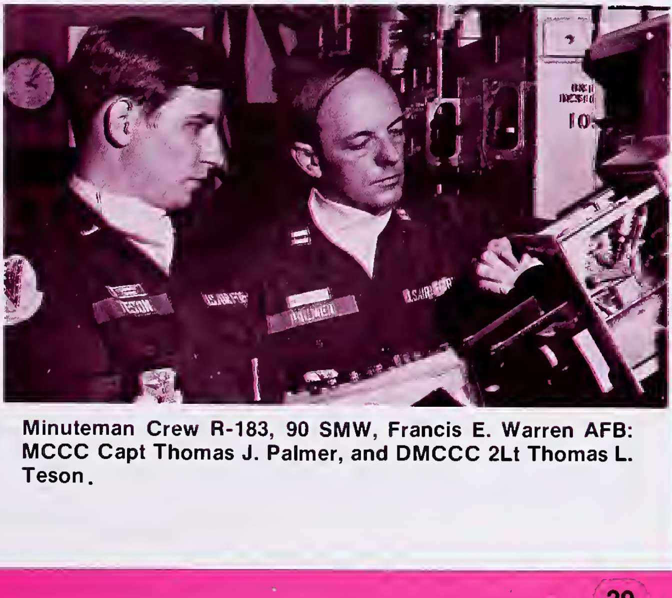
TITAN — The crew has made important contributions to continued safe and efficient missile operations. During a propellant transfer operation on a recent alert, the crew encountered an equipment malfunction which prevented continuation of the operation. The problem was compounded by the inability of personnel to enter the missile silo to correct the malfunction because the fixed vapor sensing equipment indicated the presence of toxic vapors. Believing this equipment was sampling residual propellant vapors in the sensing lines, the crew penetrated the silo to determine if vapors were actually present after they had coordinated with the proper base activities. This recommendation was approved and the crew's assessment was proven correct when no vapors were found. Their timely reactions and expertise aided immeasurably in the safe completion of this major maintenance operation.

FLYING CREW — During a recent 28th BMW ORI, Crew S-53 experienced complete failure of the number 5 engine driven hydraulic pump. Although many systems were affected, the mission was continued with the realization that with the exception of the bomb door actuator, their problems all related to the descent and landing phase of flight. The Dash One directs the accomplishment of the hydraulic system failure checklist prior to landing gear extension. During the arrival, they requested a delay at altitude in order to accomplish the landing gear emergency and the descent checklist. The emergency was further complicated by weather. Obscured sky, low visibility, wind gusts to 25 knots, and a wet runway with blowing snow was the landing conditions. With the right forward steering and crosswind crab inoperative and only three-fourths braking available, this crew performed a challenging approach and landing. The crew followed the procedure for a "real weather" approach with the copilot flying the PAR (ILS not available) and the pilot acquiring the runway environment. They broke out of the weather at minimums, the pilot made the landing, stopped at the end of the runway, where maintenance opened the bypass valve to restore the right forward steering. Several other aircraft had diverted due to weather and fuel considerations, however, through the combined efforts of this crew, the emergency was handled in a timely manner.

Crew S-53, 28th Bomb Wing, Ellsworth AFB: P Capt James E. Nickel, CP Capt James Peplinsky, RN Capt Manuel V. Key, N Capt George E. Trotter III, EWO Capt Larry B. Underwood, and G SSgt David A. Demmon.

MAINTENANCE MAN — TSgt James E. Bradley, equipment maintenance branch team chief, 43d MMS, Andersen AFB, has demonstrated outstanding technical competence and leadership. His achievements in the repair of more than 200 pieces of munitions handling equipment were acknowledged by the SAC MS&E Team. Sgt Bradley is constantly alert for improved methods and procedures. He initiated 25 TO improvement reports and submitted cost saving suggestions in excess of $200,000. During an IG ORI, Sgt Bradley's efforts were instrumental in increasing the equipment in-commission rate from 87% to 92%. Further, during a joint operation with the Navy, the in-commission rate was increased from 91% to 96% under his leadership.

MINUTEMAN — During an alert tour at Romeo Launch Control Center (LCC), Capt Palmer and Lt Teson received a call from a maintenance team at launch facility Romeo-06, informing them of an accident. A member of the team fell to the bottom of the launcher access shaft, broke his leg, and was bleeding profusely. The crew gathered available information, contacted the command post, and established a telephone communications net with the hospital emergency room. The flight surgeon determined from the crew's report that the injured man's condition was too serious to attempt to move him. Subsequently, the flight surgeon and a medical technician responded to Romeo-06 via helicopter. Capt Palmer and Lt Teson's timely and professional response were the primary contributing factors to the successful evacuation of the injured man.



Minuteman Crew R-183, 90 SMW, Francis E. Warren AFB: MCCC Capt Thomas J. Palmer, and DMCCC 2Lt Thomas L. Teson.

OPS HAZARDS

Continued from page 24

BLOWN TIRE — A T-38A, immediately after touchdown, veered sharply to the right. The pilot employed full left aileron and rudder and utilized max braking on the left tire as recommended in the Dash One. Approximately 3000 feet down the runway, the right main landing gear tire separated from the aircraft. The plane came to a stop at approximately 4000 feet from the approach end with the remaining portion of the right gear just off the hard surface. Engines were shut down and a successful emergency ground egress was accomplished.

Inspection of the brake assembly revealed one of two stators broken, one of three rotors cracked and two of eight backing plate bolt locknuts missing. Materiel failure of the stator is suspected. When the stator broke, it caught on one of six drive keys on the wheel causing the wheel to lock.

WHERE'S THE FIRE? A fire extinguisher discharged in the crew compartment of a B-52. Although no reason for the discharge has been found, it could have resulted from an accidental contact during equipment or personnel movement. The crew was subjected to toxic CB fumes and skin contact with liquid CB, but no injury or illness resulted.

TWO-ENGINE SHUTDOWN — A B-52D experienced three inoperative boost pumps (numbers 3, 4, 5) in the number one main tank. At TO plus 12, the right aft bus tie circuit breaker light illuminated. The applicable checklist was initiated and completed without resolving the malfunction. A decision was made to continue the mission with the system isolated.

At TO plus 33, the aircrew noted that number one engine would not attain NRT EPR with the throttle at max. Shortly thereafter, the crew noted erratic EPR fluctuations on number one and two engines. Fuel flow to both engines was also fluctuating. As a precautionary measure, the engine failure checklist of the Dash One was reviewed. The crew accomplished the air bleed system emergency operation check. During this check, they noted a 27 PSI drop in pressure. Suspecting an airbleed leak, the crew retarded the throttles to number 1 and 2 engines to idle. The number 2 engine continued to roll back and flamed out. Number 1 engine was also shut down as a precautionary measure.

The crew notified the command post and began to reduce weight preparatory to an expeditious landing. During fuel management activities the crew noted that the number 1 main tank didn't appear to be feeding and that number 2, 3, and 4 maintanks apparently weren't filling at a normal rate from the left and right outboard wing tanks. The number 1 tank gauge indicated 15,000 pounds of fuel and number 2, 3, and 4 tank gauges indicated 10,000 pounds each. The crew transferred fuel using the primary transfer system and then the air refuel system. The number 1 main tank remained at 15,000 pounds.

The initial postflight inspection revealed that there was no airbleed leak. However, it was determined that three boost pumps in the number 1 main tank were inoperative. Inspection revealed the ground wires to the control relays of pumps 3 and 5 were broken at the terminal connection. Number 4 pump had two 20-amp fuses blown.

SAC SAFETY SCREEN

7 BMW, Carswell Crew S-72: P Capt Paul D. Heiser, CP Capt Charles E. Felton, RN Capt Stephen T. McCutcheon, N Capt Earl M. Cornette, Jr., EW Capt Ronald Davidson, G TSgt Peter Kau

7 BMW, Carswell Crew E-13: P Capt Thomas A. Adcox, CP Capt John E. Sutton, RN Capt Mark T. Potter, N Capt David M. Barcus, EW Capt Dean J. Thompson, G Sgt Victor A. Hauser

7 BMW, Carswell Crew E-125: IP Capt James W. Barr, Jr., CP Capt Gary R. Cheeseman, N 1Lt Hector M. Martinez, BO SSgt Glen M. Haywood

7 BMW, Carswell Crew IT1: IP Lt Col Robert A. Ackroyd, IRN Capt Franklin H. Hagler, IEW Maj Richard D. Wagar, IG TSgt Michael T. Slemp

11 AREFS, Altus Crew E-127: P Capt Stuart Haupt, CP 1Lt Casey Hankel, N Capt Jon A. Hulsey, BO TSgt Walter S. Schlief

62 BMS, Barksdale Crew R-16: P Maj John R. Dydo, CP Capt Robert W. Karlin, RN Capt Robert A. Obohoski, NN 1Lt Donnald P. Hanley, NE 1Lt Randy J. Smith, AG MSgt Charles S. Lewis

596 BMS, Barksdale Crew S-64: P Maj Ross Younkin, CP Capt James R. Macon, RN Capt Jimmie L. Cowart, NN Capt Louis H. Dendy, NE 1Lt Mark S. Ashton, AG MSgt Howard Williams

71 AREFS, Barksdale Crew R-155: P Capt Gary P. Roehrig, CP 2Lt Mark C. Schwing, NN 1Lt William C. Flickinger, BO A1C Lawrence L. Stockton

913 AREFS, Barksdale Crew E-105: P Capt Roy E. Sewall, CP Capt Robert D. Clark, Jr., NN Capt Charles W. Concannon, BO SMSgt Kenneth M. Brack

100 AREFW, Beale Crew E-157: P Capt Jimmy C. Crawford, CP Capt Roger S. Stapleton, N Capt Carrol A. Nast, BO A1C Wayne I. Hodgs

9 SRW, Beale Crew E-68: P Capt David J. Kantrud

307 AREFG, Travis Crew E-107: P Capt James F. Salomone, CP Capt Lyle L. Ballance, Jr., N Capt Loren D. Morgan, BO SSgt Eddie C. Masten

319 BMW, Grand Forks Crew E-06: P Capt Garry G. Kraemer, CP Capt Kenneth Miller, RN Capt Kevin S. Riley, N 2Lt Robert K. Pair, EW Capt Steven S. Sato, AG Sgt Harold W. Davis

5 BMW, Minot Crew R-22: P Capt Donald J. Bussian, CP Capt Daryl R. Metzner, N 1Lt Leslie C. Arnold, RN Capt Ramond B. Isaia, EW Capt Stephen A. Paterson, AG Sgt Charles M. Denney, Jr.

93 BMW, Castle Crew IT-36: P Capt Charles C. Bullock, Jr., RN Capt Dennis W. Krippner, EW Maj Lewis Frigyes, AG SSgt Gary W. Jackson

28 BMW, Ellsworth Crew R-56: P Capt Arthur C. Street, CP 1Lt Edward J. Sitnik, CP 1Lt Ray D. Mitchell, RN Capt Michael S. Doran, N Capt Vernon Waymire, EW Capt John H. Gaura, AG A1C Bradley V. Karl

91 SMW, Minot Crew E-023/E-084: MCCC Capt Dale H. Kilian, DMCCC 1Lt Paul C. Kubicki

321 SMW, Grand Forks Crew R-067: MCCC 1Lt Douglas H. Shank, DMCCC 2Lt William T. McCulken

351 SMW, Whiteman Crew E-034: MCCC Capt Larry D. Wroten, DMCCC 1Lt John P. Moore

381 SMW, McConnell Crew R-024: MCCC 1Lt Louis H. Schweichler, DMCCC 1Lt Steven M. Welch, MSAT A1C Douglas A. Preidis, MFT A1C Richard O. Greenway

390 SMW, Davis-Monthan Crew R-151: MCCC 1Lt John C. Boyer, DMCCC 2Lt Otto S. Krueger, MSAT A1C Mark J. Booth, MFT A1C Barton E. Griffin

The SAC Safety Screen is an honor roll of SAC's most professional crews. To gain listing on the Screen, crew members must be nominated by their unit commanders and meet high selection criteria of experience in their aircraft or missile system *IAW SACR 127-2*.

U.S. Government Printing Office
1978-765-129/7

UNIVERSITY OF FLORIDA
3 1262 09304 9970

HALL OF FAME

TACTICAL FLYING

OVER TWENTY-TWO YEARS

170 AREFG, McGuire (NJANG)	NONE

OVER TWENTY YEARS

171 AREFW, Greater Pittsburgh (PAANG)	Mar '58
157 AREFG, Pease (NHANG)	Jun '58
97 BMW, Blytheville	Aug '58

OVER NINETEEN YEARS

940 AREFG, Mather (USAFR)	May '59

OVER EIGHTEEN YEARS

307 AREFG, Travis	Sep '59

OVER SEVENTEEN YEARS

19 BMW, Robins	Oct '60
151 AREFG, Salt Lake City (UTANG)	Feb '61
161 AREFG, Sky Harbor (AZANG)	Apr '61
126 AREFW, Chicago O'Hare (ILANG)	Apr '61
134 AREFG, McGhee Tyson (TNANG)	Aug '61

OVER SIXTEEN YEARS

340 AREFG, Altus	Feb '62
301 AREFW, Rickenbacker	Jul '62
96 BMW, Dyess	Aug '62

OVER THIRTEEN YEARS

160 AREFG, Rickenbacker (OHANG)	Dec '64
320 BMW, Mather	Jul '65

OVER ELEVEN YEARS

452 AREFW, March (USAFR)	Sep '66
92 BMW, Fairchild	Feb '67
55 SRW, Offutt	Jul '67
2 BMW, Barksdale	Aug '67

OVER TEN YEARS

319 BMW, Grand Forks	Dec '67
22 BMW, March	Feb '68

OVER NINE YEARS

5 BMW, Minot	Feb '69

OVER EIGHT YEARS

42 BMW, Loring	Sep '69
141 AREFW, Fairchild (WAANG)	Oct '69
28 BMW, Ellsworth	May '70

OVER SIX YEARS

7 BMW, Carswell	Mar '72
101 AREFW, Bangor (MEANG)	Mar '72
416 BMW, Griffiss	May '72
305 AREFW, Grissom	Aug '72

OVER FIVE YEARS

376 SW, Kadena	Nov '72
379 BMW, Wurtsmith	Apr '73

OVER FOUR YEARS

384 AREFW, McConnell	Mar '74
189 AREFG, Little Rock (ARANG)	May '74

ICBM

OVER FOURTEEN YEARS

90 SMW, F E Warren	Jul '64

OVER THIRTEEN YEARS

1 STRAD, Vandenberg	Sep '64
308 SMW, Little Rock	Aug '65

OVER EIGHT YEARS

341 SMW, Malmstrom	Apr '70

OVER FIVE YEARS

390 SMW, Davis-Monthan	Jul '73

To gain listing in the Hall of Fame, a SAC or ARF unit must be Class A mishap-free for 48 months